MANAGING EFFECTS OF A SCHEDULED OUTAGE OF MAINS POWER

[0001] The present invention relates to managing the effects of scheduled power outages though a communication network. The consequences of scheduled power outages may be felt at a network level through traffic fluctuations arising from the impact of power outages upon stationary connected devices. Alternatively the effects may be felt at a user level through the unavailability of stationary connected devices or the machines, tools or utilities with which they are associated.

BACKGROUND TO THE INVENTION

[0002] Cellular communication networks continue to experience rapid growth, with the number of devices connected via such networks forecast to increase substantially in the near future. It is expected that machine type devices (MTDs) will contribute significantly to this forecast increase in connected devices. Machine type devices are autonomous, often very small devices typically associated with equipment or apparatus as opposed to a human user. MTDs use cellular or other types of communication networks to communicate with an application server, which may or may not be comprised within the cellular network. The application server receives information from the MTD and configures the MTD remotely to provide a particular functionality. MTDs represent a subset within the larger category of User Equipment devices (UEs), and may also be referred to as machine to machine (M2M) devices. Applications employing MTDs may facilitate activates in a wide range of service areas, examples of which are set out in table **1** below:

TABLE 1

Service Area	MTC applications
Security	Surveillance systems
	Backup for landline
	Control of physical access (e.g. to buildings)
	Car/driver security
Tracking & Tracing	Fleet Management
	Order Management
	Pay as you drive
	Asset Tracking
	Navigation
	Traffic information
	Road tolling
	Road traffic optimisation/steering
Payment	Point of sales
	Vending machines
	Gaming machines
Health	Monitoring vital signs
	Supporting the aged or handicapped
	Web Access Telemedicine points
	Remote diagnostics
Remote Maintenance/ Control	Sensors
	Lighting
	Pumps
	Valves
	Elevator control
	Vending machine control
	Vehicle diagnostics
Metering	Power
	Gas
	Water
	Heating
	Grid control
	Industrial metering
Consumer Devices	Digital photo frame
	Digital camera
	eBook

[0003] As may be appreciated from the above examples, many thousands of MTDs may be deployed at a particular location supporting a wide range of MTC applications. Unlike traditional user equipment devices, a large number of such devices will be substantially stationary, and may be powered using mains power supply.

[0004] Considerable advances have been made in modernising the supply of mains power, for example through the introduction of Smart Grids and Automated Demand Response Management. Smart Grids are electrical power supply grids that use communication technology to gather and act on information in an automated manner with the goal of improving the efficiency and reliability of energy production and distribution. Automated Demand Response Management is a system allowing communication between energy supplies and consumers, enabling automated response to pricing changes and electrical grid load fluctuations, thus improving the balance between supply and demand in energy production and distribution. Despite such advances, scheduled power outages remain a reality for many energy consumers. In developing economies in particular, where rapidly expanding energy demand frequently outstrips supply, regular power outages are common. In India for example, population 1.2 billion, very few metropolitan locations enjoy 24×7 mains power supply, and for the 65% of the population who live in rural and semi-urban areas, scheduled power outages may be a daily occurrence. Even where mains power is more or less constantly available, grid maintenance work may require temporary interruption of power supply, and meteorological or other factors may lead to precautionary action on the part of energy suppliers to impose power outages at certain times and in certain locations.

[0005] Nascent and developing M2M ecosystems, and the communications networks that support them, may be particularly impacted by the scheduled power outages discussed above, with large numbers of M2M devices in a single location going offline, and coming back online, at the same time. As developing economies increasingly adopt networked models of society, industry and commerce, challenges remain in managing the impact that intermittent mains power supply may have upon such activities and the communications networks that support them.

SUMMARY

[0006] It is an aim of the present invention to provide methods and apparatus which assist in addressing at least one or more of the challenges mentioned above.

[0007] According to an aspect of the present invention, there is provided a method, in a node of a communication network, for managing effects of a scheduled outage of mains power. The method comprises receiving a notification of a scheduled outage of mains power, the notification comprising a location to be affected by the scheduled outage and a time period during which the scheduled outage is scheduled and identifying mains powered devices registered